E/CONF.39/C/434
SUMMARY
1 Nov.1962
ORIGINAL : ENGLISH

UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

SUMMARY

Agenda Item: C.4.2

United States of America

CONTRIBUTION OF SCIENCE TO THE UNDERSTANDING AND CONTROL OF PLANT DISEASES

By E.C. STAKMAN,
Institute of Agriculture,
University of Minnesota,
St. Paul, Minnesota

Papers have been contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas as working papers for that Conference. They are published as presented by the contributors, and the contents and the views expressed are those of the contributors. (See notes overleaf.)

NOTES

1. Papers selected for inclusion in General Sessions will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

2. Papers selected for inclusion in Specialized Sessions will be available at the Conference in only one of the above official languages.

3. Summaries of all papers, as submitted by contributors, will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

4. Papers and summaries will not be available for general distribution in advance of the Conference. They will be published in advance in limited quantities only for the use of delegations of participating governments and of other authorized participants. Post-Conference publication and general distribution of the Conference Proceedings will follow United Nations practices as laid down by the United Nations Publications Board.

CONTRIBUTION OF SCIENCE TO THE UNDERSTANDING AND CONTROL OF PLANT DISEASES

No. 720

C.4.2.

By: E. C. Stakman

Institute of Agriculture
University of Minnesota
St. Paul, Minnesota

SUMMARY

1. Plant disease control is an essential phase of all agricultural improvement programs.

2. Plant diseases reduce agricultural production at least 10 per cent annually in those countries where protective measures are used efficiently and more in those countries where they are not. In addition, some of the destruction attributed to bad weather, weeds, and insects must also be charged to diseases, which often aggravate the direct damage caused by those agents. Many diseases, such as rusts of wheat, rice blasts, and potato blight, often become devastatingly epidemic and destroy millions of bushels of basic foods in a single year, causing economic disruption and distress in most countries and disastrous food shortages in many.

3. Science and technology have contributed greatly to the understanding and control of plant diseases during the past several decades; and it is imperative that the increased knowledge and better techniques be effectively used to help increase and ensure food production, especially in the hungrier areas of the world.

4. There are thousands of kinds of plant diseases on thousands of kinds and varieties of cultivated and wild plants. They can be caused by bad weather or bad soil; by living pathogens, such as bacteria, fungi, and nematodes; or by pathogenic viruses. Pathogens are dangerous and shifty because each species may comprise numerous parasitic races, because they can multiply with amazing rapidity, and because they can be disseminated quickly and widely by the wind or insects or by means of man's commerce in seeds and other plant materials.

5. Different kinds of diseases must be combated by different methods: phytosanitary services, the use of chemicals, and the development of resistant varieties. Each method requires the services of specialists. Phytosanitary services, such as seed certification, quarantines, and eradication campaigns, are highly effective against many diseases if efficiently operated. Many diseases can be prevented by disinfecting seeds or by spraying or dusting growing plants at appropriate times with appropriate chemicals, but such treatments are ineffective and sometimes harmful if inappropriately used. Prescriptions for the best use of chemicals should be made by experts. The development of disease-resistant varieties is one of the most urgent needs in agriculture, for there is no other practicable method of controlling many of the most destructive diseases of basic food and feed crops. But success depends on adequate scientific knowledge regarding the complexities of the crop plants and their pathogens and the complexity of their interrelationships. Breeding for disease resistance and the other methods of disease control require inter scientific-guild and international cooperation, because the problems and the diseases often transcend the boundaries between scientific disciplines and between nations.

S - 1443 E - Nov.1962 - 1,600